WHAT IS CLAIMED IS:

1. A method of creating an ultrasonic image of a hard tissue within a target, the method comprising:

(a) transmitting from at least one ultrasonic transducer at a defined location a focused beam of ultrasonic energy towards the target;

(b) adjusting an angle of incidence between said focused beam and a surface of the hard tissue to a normal angle, by positioning said at least one ultrasonic transducer;

(c) receiving a significant portion of said energy as an echo-reflection at said defined location;

(d) defining said location of said transducer in six degrees of freedom;

(e) calculating a set of position co-ordinates for a portion of a surface causing said echo-reflection;

(f) moving said ultrasonic transducer to a different defined location;

(g) repeating steps a through f; and

(h) compiling at least a portion of said sets of position co-ordinates to generate a map of at least a portion of said surface causing said echo-reflection;

(i) determining at least a portion of said map which represents a surface of the hard tissue within the target according to a predetermined rule.

2. The method of claim 1, wherein said predetermined rule is selected from a group consisting of a geometric rule and a physical rule.

3. The method of claim 1, wherein said predetermined rule includes maximization of the function:

$F(x,y, r1. r2, r3) = \Sigma (refl(Area\ 1)) - C^*\Sigma (ref2(Area\ 2))$

wherein (x ,y) represent an assumed position coordinate within a slice of the hard tissue within the target; and

wherein r1,r2 and r3 each individually represent a radius of the hard tissue with respect to said assumed position co-ordinate at a series of angles $\alpha 1$, $\alpha 2$ and $\alpha 3$respectively;

wherein refl represents a sum of said portion of energy received as an echo reflection within a first area (Area 1) and ref2 represents a sum of said portion of energy received as an echo reflection within a second area (Area 2); and wherein C represents a constant.

4. The method of claim 1, further comprising :

(i) displaying upon a display device at least one item selected from the group consisting of:

(i) data pertaining to said echo-reflection;

(ii) said set of position co-ordinates for a portion of said surface of the hard tissue causing said echo-reflection; and

(iii) said map.

5. The method of claim 1, further comprising:

(i) controlling, by means of a central processing unit, performance of at least a portion of the method.

6. The method of claim 5, wherein said controlling includes at least one item selected from the group consisting of said adjusting and said moving.

7. The method of claim 6, wherein said controlling indicates at least one control mechanism selected from the group consisting of mechanical control, selection from an array and electronic control.

8. The method of claim 1, wherein at least one item selected from the group consisting of said adjusting and said moving is performed manually by a practitioner of the method.

9. The method of claim 8, wherein said performed manually indicates at least one manual input selected from the group consisting of a manual position adjustment by said practitioner of the method and at least one instruction transmitted to said central processing unit by said practitioner of the method.

10. The method of claim 1, wherein said map is selected from the group consisting of a two dimensional map and a three dimensional map.

11. A system for creating an ultrasonic image of a hard tissue within a target, the system comprising:

(a) at least one ultrasonic transducer:

(i) said at least one transducer positioned at a defined location;

(ii) said at least one transducer capable of transmitting a focused beam of ultrasonic energy towards the target;

(iii) said at least one transducer capable of receiving a significant portion of said energy as an echo-reflection from a surface of the hard tissue; and

(iv) said at least one transducer transducer capable of communication with a central processing unit;

(b) a position locator and adjustment mechanism coupled to said at least one transducer;

(i) said position locator and adjustment mechanism designed and constructed to be capable of adjusting an angle of incidence between said focused beam and said surface of the hard tissue in response to a command from said central processing unit;

(ii) said position locator and adjustment mechanism further designed and constructed to be capable of defining said location of said transducer in six degrees of freedom and transmitting said definition to said central processing unit;

(iii) said position locator and adjustment mechanism further designed and constructed to be capable of moving said ultrasonic transducer to a series of different defined location;

(c) said central processing unit designed and configured to;

(i) transmit commands to said position locator and adjustment mechanism to cause said transducer to move to said series of different defined locations

(ii) calculate a set of position co-ordinates for at least portion of said surface of the hard tissue causing said echo-reflection;

(iii) compile a plurality of said sets of position co-ordinates to generate a map of at least a portion of said surface of the hard tissue by applying a predetermined rule.

12. The system of claim 11, further comprising a:

(d) a display device capable of communication with said central processor; said display device designed and constructed to perform at least one function selected from the group consisting of :

(i) display data pertaining to said echo-reflection;

(ii) display said set of position co-ordinates for a portion of said surface of the hard tissue causing said echo-reflection; and

(iii) display at least a portion of said map.

13. The system of claim 11, wherein said angle of incidence is a normal angle determined by moving said at least one ultrasonic transducer.

14. The system of claim 11, wherein said position locator and adjustment mechanism employs at least one type of control selected from the group consisting of mechanical control, selection from an array and electronic control.

15. The system of claim 11, wherein said position locator and adjustment mechanism is further designed and configured to receive input from an operator of the system, said input being selected from the group consisting of a manual position adjustment by an operator of the system and at least one instruction transmitted to said central processing unit.

16. The system of claim 11, wherein said map is selected from the group consisting of a two dimensional map and a three dimensional map.

17. The system of claim 11, wherein said predetermined rule is selected from a group consisting of a geometric rule and a physical rule.

18. The system of claim 11. wherein said predetermined rule includes maximization of the function:

$F(x,y, r1. r2, r3) = \Sigma$ (refl(Area 1)) - $C^*\Sigma$ (ref2(Area 2))

wherein (x ,y) represent an assumed position coordinate within a slice of the hard tissue within the target; and

wherein r1,r2 and r3 each individually represent a radius of the hard tissue with respect to said assumed position co-ordinate at a series of angles $\alpha 1$, $\alpha 2$ and $\alpha 3$respectively;

wherein refl represents a sum of said portion of energy received as an echo reflection within a first area (Area 1) and ref2 represents a sum of said portion of energy received as an echo reflection within a second area (Area 2); and wherein C represents a constant.

19. A method of creating an ultrasonic image of a hard tissue including irregularities thereupon, the method comprising:

(a) transmitting a focused beam of ultrasonic energy from at least one ultrasonic transducer at a first defined location towards a surface of the hard tissue;

(b) receiving a portion of said energy as an echo-reflection at at least one second defined location;

(c) calculating a set of position co-ordinates corresponding to an ultrasonic reflector for each of said at least one second defined location;

(d) repeating steps a through c;

(e) deciding if said reflector is a hard tissue according to a first predetermined criteria;

(f) deciding if said reflector is an irregularity on the surface of hard tissue according to a second predetermined criteria; and

(g) compiling at least a portion of said sets of position co-ordinates to generate a map of at least a portion of said surface of the hard tissue.

20. The method of claim 19, wherein each of said defined locations is defined as a set of position co-ordinates.

21. The method of claim 19, wherein said first defined location include angles of transmission.

22. The method of claim 19, further including employing additional first defined locations for said transmitting.

23. The method of claim 19, further including employing additional second defined locations for said receiving.

24. The method of claim 19, further comprising:

(h) displaying upon a display device at least one item selected from the group consisting of:

(i) data pertaining to said echo-reflection;

(ii) said set of position co-ordinates for said portion of the surface of the hard tissue causing said echo-reflection; and

(iii) at least a portion of said map.

25. The method of claim 19, further comprising:

(h) controlling, by means of a central processing unit, performance of at least a portion of the method.

26. The method of claim 25, wherein said controlling includes repositioning at least one item selected from the group consisting of at least one of said at least one ultrasonic transducer and an ultrasonic receiver.

27. The method of claim 25, wherein said controlling indicates at least one control mechanism selected from the group consisting of mechanical control, selection from an array and electronic control.

28. The method of claim 19, wherein said map is selected from the group consisting of a two dimensional map and a three dimensional map.

29. A system for creating an ultrasonic image of a hard tissue and any irregularities thereupon within a target, the system comprising:

(a) at least one ultrasonic transmitter capable of transmitting a focused beam of ultrasonic energy from at least one first defined location towards a surface of the hard tissue and further capable of communication with a central processing unit;

(b) at least one ultrasonic receiver capable of receiving a portion of said energy as an echo-reflection at at least one second defined location and further capable of communication with said central processing unit;

(c) a position locator and adjustment mechanism operably connectable to said at least one transmitter and said at least one receiver and capable of communication with said central processing unit and designed and constructed to be capable of moving said transmitter and said receiver to a series of different defined locations; and

(d) said central processing unit designed and configured to :

(i) calculate a set of position co-ordinates corresponding to an ultrasonic reflector for each of said at least one second defined location;

(ii) decide if said reflector is a hard tissue according to a first predetermined criteria;

(iii) decide if said reflector constitutes an irregularity on the surface of the hard tissue according to a second predetermined criteria

(iv) compile at least a portion of said sets of position co-ordinates to generate a map of at least a portion of said surface of the hard tissue; and

(v) transmit commands to said position locator and adjustment mechanism to cause said transducer to move to said series of different defined locations

30. The system of claim 29, further comprising a:

(d) a display device capable of communication with said central processor; said display device designed and constructed to perform at least one function selected from a group consisting of :

(i) display data pertaining to said echo-reflection;

(ii) display said set of position co-ordinates for a portion of said surface of the hard tissue causing said echo-reflection; and

(iii) display at least a portion of said map.

31. The system of claim 29, wherein said position locator and adjustment mechanism employs at least one type of control selected from the group consisting of mechanical control, selection from an array and electronic control.

32. The system of claim 29, wherein said position locator and adjustment mechanism is further designed and configured to receive input from an operator of the system, said input being selected from the group consisting of a manual position adjustment by an operator of the system and at least one instruction transmitted to said central processing unit.

33. The system of claim 29, wherein said map is selected from the group consisting of a two dimensional map and a three dimensional map.